(12) UK Patent Application (19) GB (11) 2 232 755 (13) A

(43) Date of A publication 19.12.1990

(21) Application No 9012587.3

(22) Date of filing 06.06.1990

(30) Priority data
(31) 01151998 (32) 13.06.1989 (33) JP
01152756 15.06.1989
01249487 26.09.1989

(71) Applicant
Kabushiki Kaisha Toshiba

(Incorporated in Japan)

72 Horikawa-cho, Saiwai-ku, Kawasaki-shi, Kanagawa-ken, Japan

(72) Inventor
Mitsuji Fushiya

(74) Agent and/or Address for Service
Marks & Clerk
57-60 Lincoln's Inn Fields, London, WC2A 3LS, United Kingdom

(51) INT CL[5]
D06F 49/00

(52) UK CL (Edition K)
F4G GBCK G1S

(56) Documents cited
GB 1472205 A GB 1015336 A

(58) Field of search
UK CL (Edition K) F4G GBAA GBCC GBCE GBCK
INT CL[5] D06F 49/00
Online databases: WPI

(54) Twin tub type washing machine

(57) A twin tub type washing machine includes a dehydration tub (21) driven by a dehydration motor (22), a brake (24) including a braking member (29) moved into contact with and away from a rotational member (27) so that the dehydration tub (21) is braked, an operation motor (33) driven to move the braking member (29) into contact with and away from the rotational member (27), and a control circuit. When the dehydration operation is initiated, the control circuit operates to start the operation motor (33) one or two seconds before the start of a dehydration operation, thereby unbraking the dehydration tub (21). When a dehydration tub lid (42) is opened, the control circuit is responsive to a lid switch (45) interlocked with the lid (42) and operates to immediately deenergize the dehydration motor (22) and then, to deenergize the operation motor (33) with a delay of one or two seconds so that the dehydration tub (21) is braked.

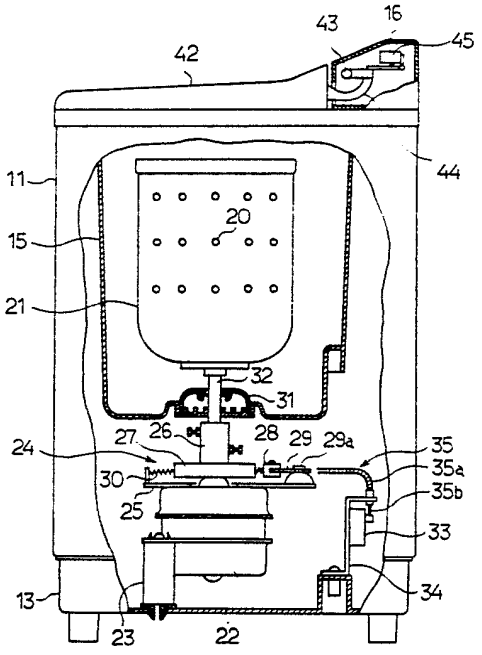

FIG.1

GB 2 232 755 A

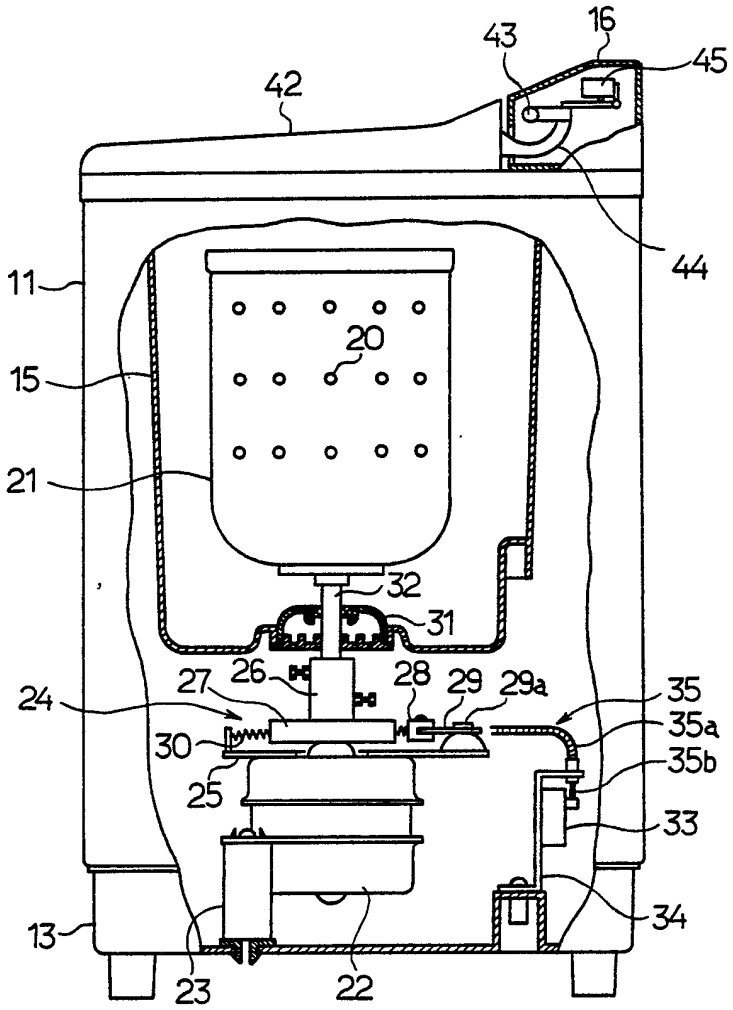

FIG.1

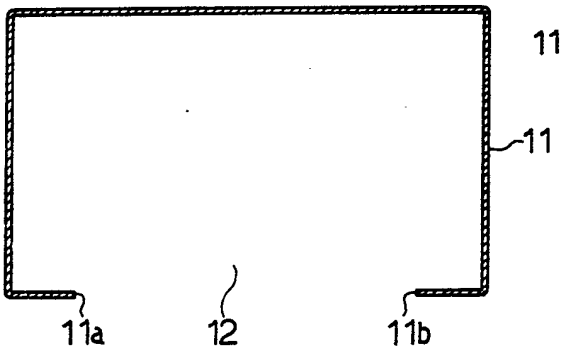

FIG.2

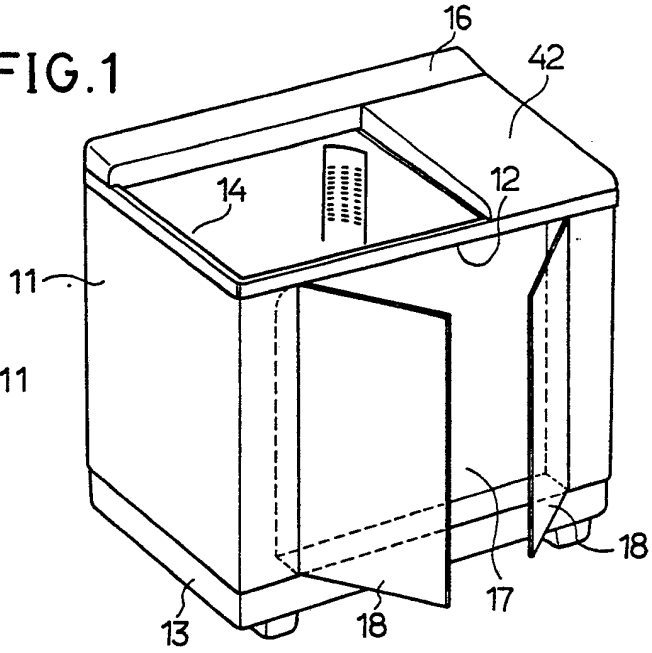

FIG.3

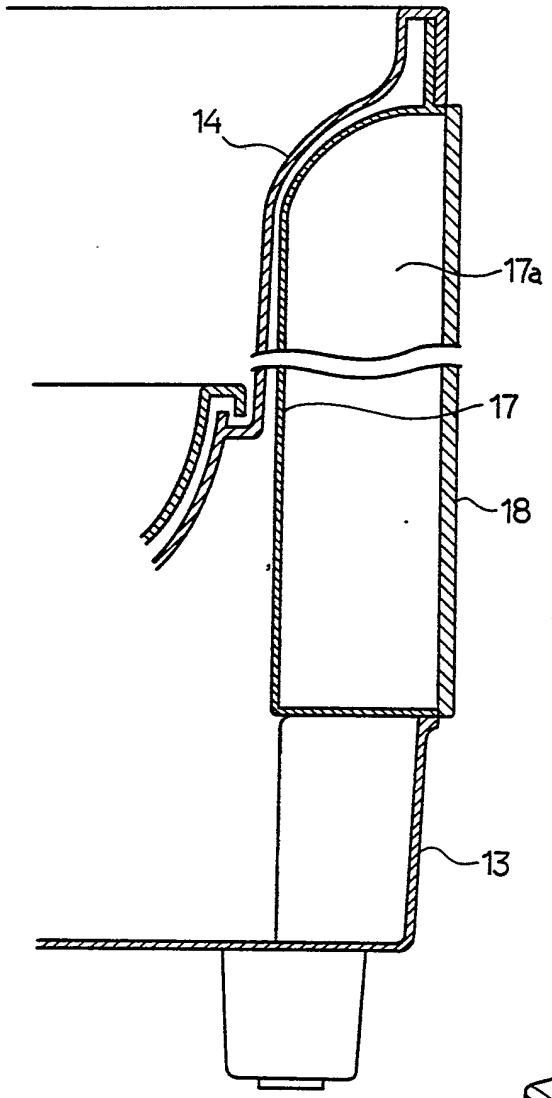

FIG. 4

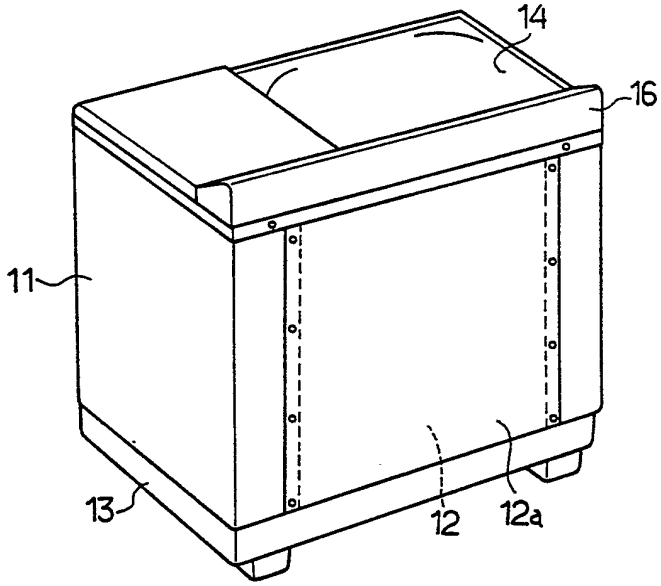

FIG. 5

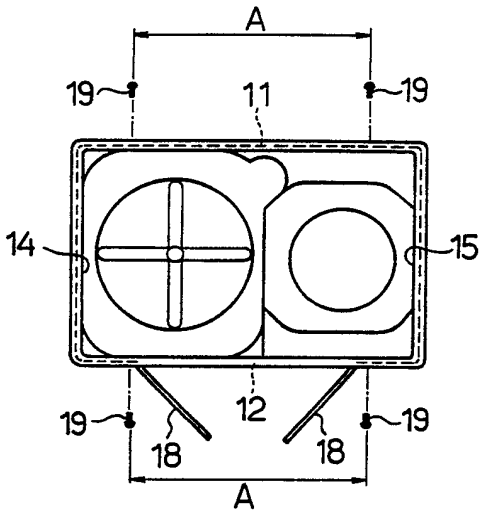

FIG.6

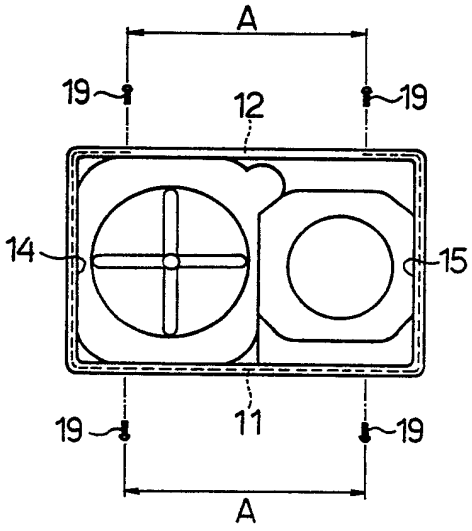

FIG.7

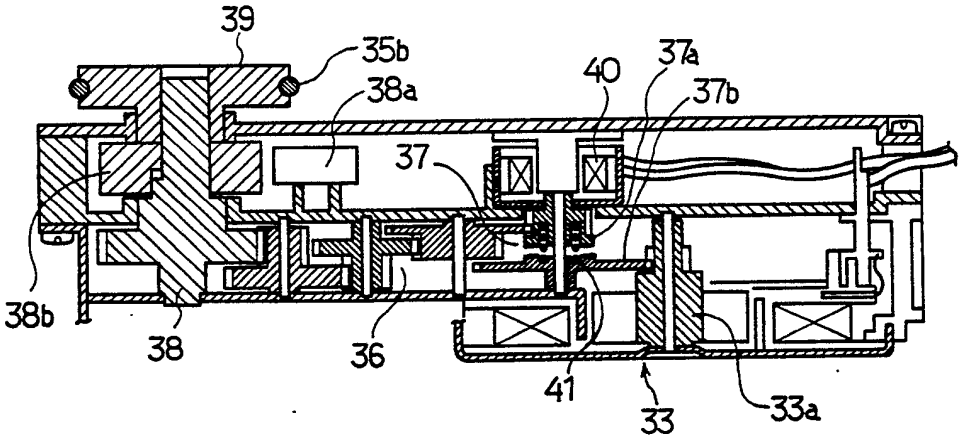

FIG.8

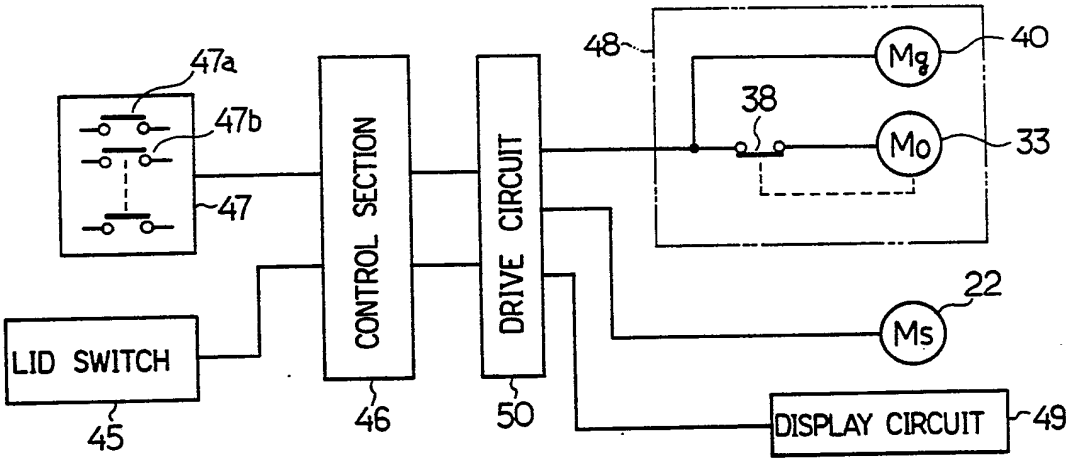
47a
47b
47
CONTROL SECTION
DRIVE CIRCUIT
48
Mg
40
38
Mo
33
22
Ms
LID SWITCH
45
46
50
DISPLAY CIRCUIT
49

FIG.9

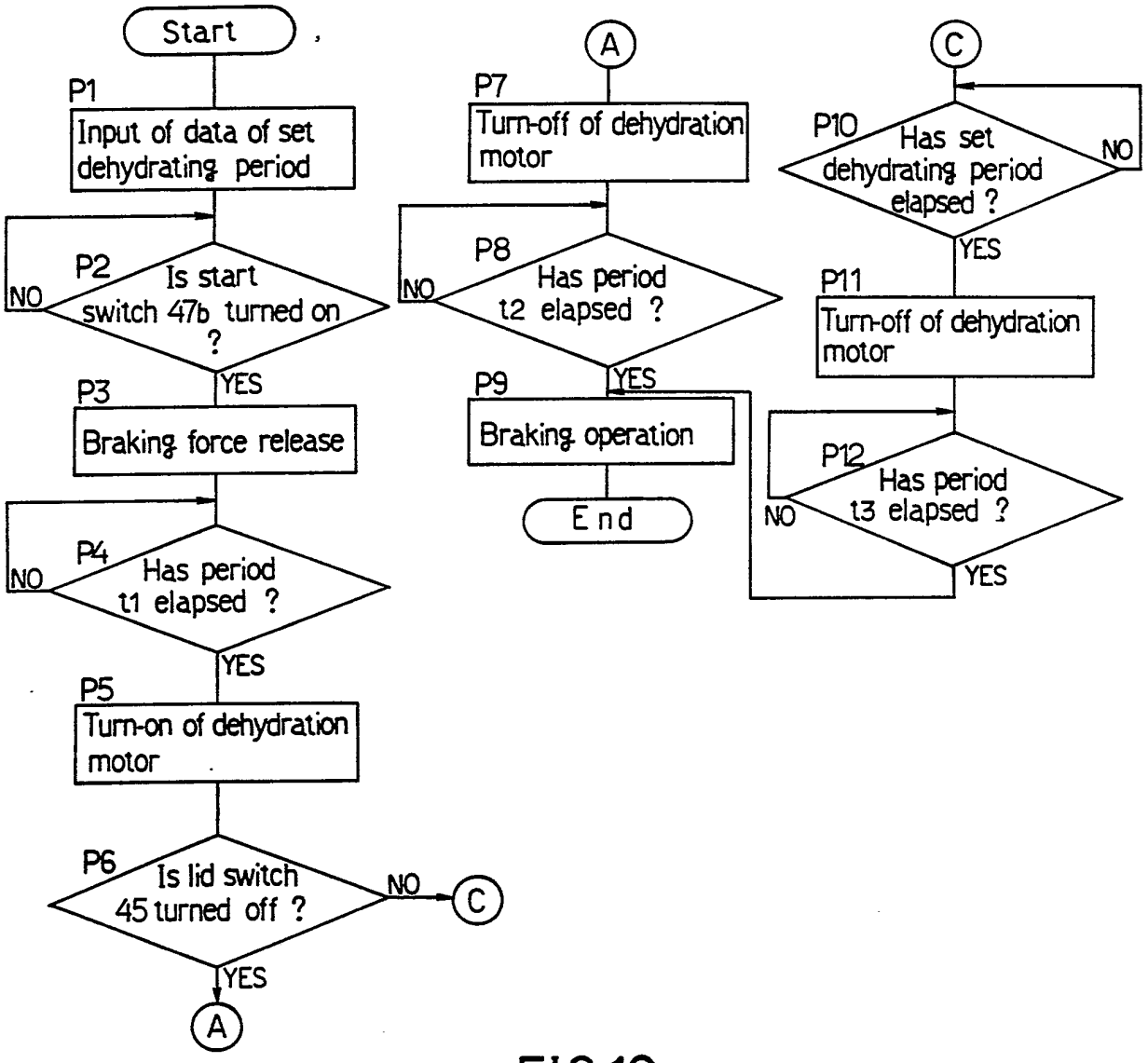
Start
P1
Input of data of set dehydrating period
P2
Is start switch 47b turned on ?
NO
YES
P3
Braking force release
P4
Has period t1 elapsed ?
NO
YES
P5
Turn-on of dehydration motor
P6
Is lid switch 45 turned off ?
NO
C
YES
A
A
P7
Turn-off of dehydration motor
P8
Has period t2 elapsed ?
NO
YES
P9
Braking operation
End
C
P10
Has set dehydrating period elapsed ?
NO
YES
P11
Turn-off of dehydration motor
P12
Has period t3 elapsed ?
NO
YES

FIG.10

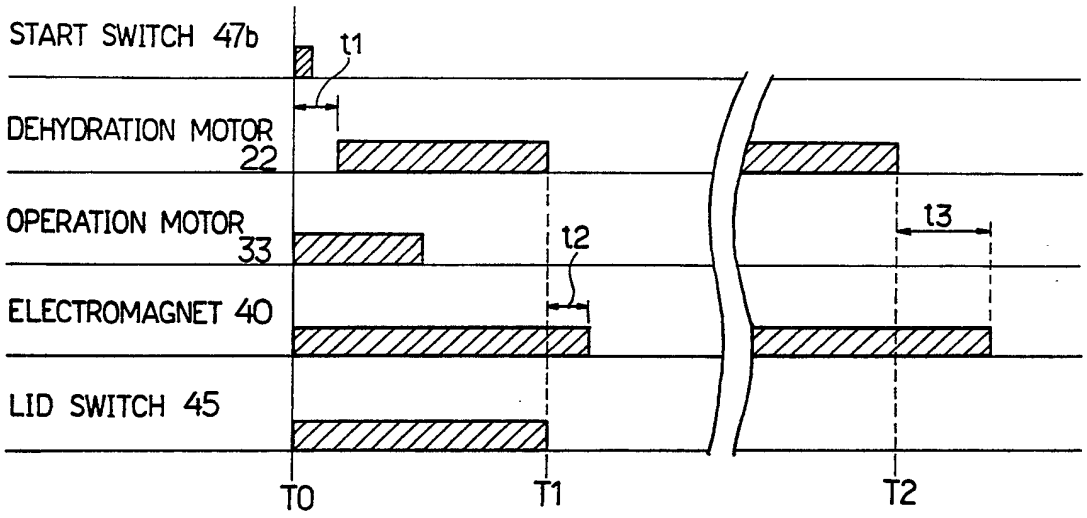
START SWITCH 47b
t1
DEHYDRATION MOTOR 22
OPERATION MOTOR 33
t2
t3
ELECTROMAGNET 40
LID SWITCH 45
T0
T1
T2

FIG.11

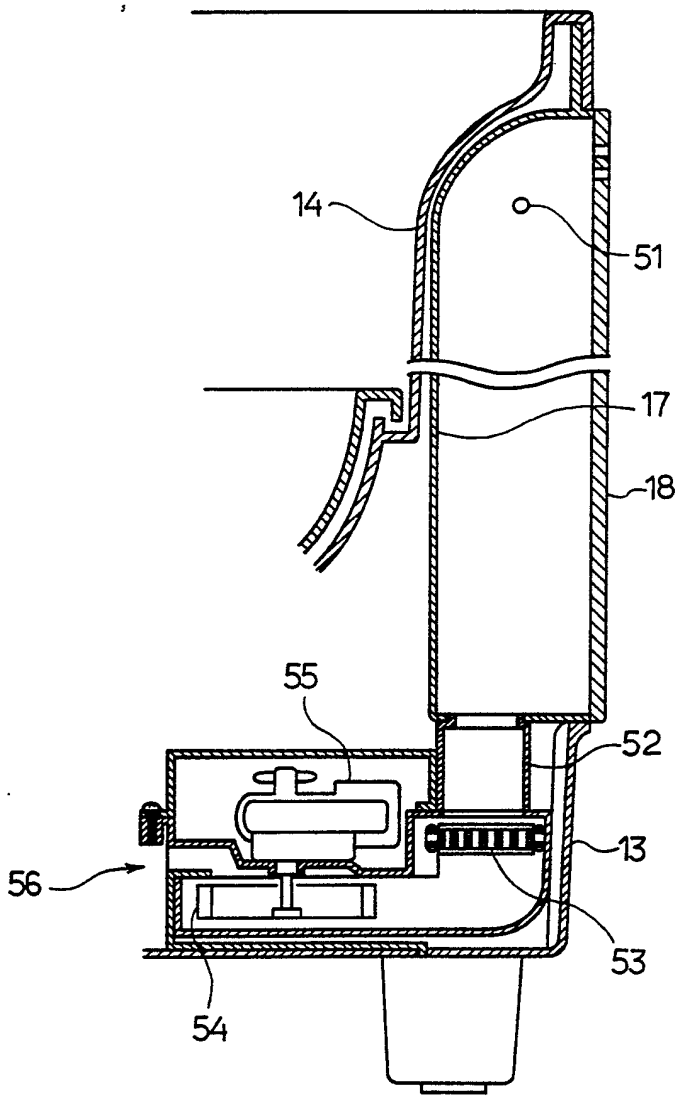
14
51
17
18
55
52
13
56
53
54

FIG.12

TWIN TUB TYPE WASHING MACHINE

The present invention relates to a twin tub type washing machine which includes a water receiving tub disposed side by side with a wash tub and a dehydration tub disposed in the water receiving tub so as to be driven by a dehydration motor provided under the water receiving tub, and more particularly to such a twin tub type washing machine provided with a brake provided under the water receiving tub for braking the dehydration tub and an operation motor for operating the brake.

Conventionally, in such a twin tub type washing machine as described above, a dehydration tub is provided in a water receiving tub disposed side by side with a wash tub. The dehydration tub is rotated by a dehydration motor provided under the water receiving tub. A brake is also provided under the water receiving tub. The brake is interlocked with a dehydration tub lid closing and opening a clothes access opening formed over the water receiving tub, through a rotatable arm and coupling wire such that when the dehydration tub lid is opened, the rotation of the dehydration tub is immediately terminated.

In accordance with the above-described conventional washing machine, the brake mechanism disposed under the water receiving tub is coupled to the dehydration tub lid disposed over the water receiving tub by the rotatable arm and coupling wire. Consequently, the assembling work needs

to be done via an opening formed in the rear of an outer cabinet, which entails troublesomeness.

Furthermore, the operational displacement of the brake depends upon the closing and opening operations of the dehydration tub lid. Consequently, the construction for closing and opening the dehydration tub lid is necessarily limited to that in which a rotative movement stroke is obtained. Additionally, this limitation complicates the construction around a hinge on which the dehydration tub lid is mounted.

Therefore, an object of the present invention is to provide an improved twin tub type washing machine wherein the operating mechanism for the brake for braking the dehydration tub can be assembled with ease.

Another object of the invention is to provide an improved twin tub type washing machine wherein wear of a brake shoe of the braking mechanism for braking the dehydration tub can be reduced as much as possible.

A further another object of the invention is to provide an improved twin tub type washing machine wherein a multipurpose small compartment can be ensured in the front side of the outer cabinet.

The present invention provides a twin tub type washing machine comprising an outer cabinet in which a wash tub is disposed side by side with a water receiving tub having an upper open end, a lid provided to close and open the upper open end of said water receiving tub, a dehydration tub

disposed within said water receiving tub so as to be coupled to a dehydration shaft rotatively extended through the bottom of said water receiving tub, a dehydration motor disposed under said water receiving tub for driving the dehydration shaft, braking means for braking the dehydration shaft, an operation motor for operating said braking means, and control circuit means for controlling both of said dehydration and operation motors so that said motors are energized and deenergized.

In accordance with the above-described washing machine, since the operation motor for operating the braking means is disposed in the vicinity of the braking means, the rotatable arm and coupling wire provided between the lid and the braking means for operation of the braking means are not necessitated. Consequently, the assembling work may be simplified. Furthermore, since the rotatable arm and coupling wire are not provided in the outer cabinet, a small compartment may be ensured in the front side of the outer cabinet. The compartment may be utilized to contain generally small articles or for other purposes.

It is preferable that the braking means comprise a rotational member provided so as to be rotated with said dehydration shaft, a braking member provided so as to be moved into contact with and away from said rotational member, spring means for usually urging said braking means in the direction that said braking means is brought into contact with said rotational member, and displacement

transmission means operatively coupled to said operation motor so as to be displaced when a rotational force is transmitted from said operation motor thereto, thereby moving said braking member away from said rotational member.

It is also preferable that the operation motor further comprise a rotor, an output shaft, reverse rotation preventing means provided between the output shaft and the rotor for preventing the reverse rotation of the output shaft of said operation motor in the state that the same is effectuated, and an electromagnetic solenoid controlling said reverse rotation preventing means so that the same is either effectuated or rendered ineffective.

It is further preferable that said control circuit means comprise timer means provided for initiating the energization of said operation motor prior to the energization of said dehydration motor so that the delay in the braking force releasing operation is compensated for at the start of the dehydrating operation.

Preferably, in consideration of the fact that the wear of the brake shoe is reduced as rotational speed of the dehydration tub is decreased at the start of the braking operation, said control circuit means may comprise timer means provided for initiating the braking operation performed by said operation motor with a predetermined delay period from the deenergization of said dehydration motor.

In a further another preferable form of the invention, the twin tub type washing machine further comprises a lid

switch operated in response to the opening of said lid, thereby deenergizing said dehydration motor, and said control circuit means comprises determination means for determining whether said dehydration motor is deenergized based on completion of an operation cycle of the washing machine or on the operation of said lid switch and wherein the predetermined delay period is set to be longer in the case of the completion of the operation cycle of the washing machine than in the case of the operation of said lid switch.

The invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a broken-out side sectional view of a twin tub type washing machine of an embodiment of the present invention;

FIG. 2 is a transverse sectional view of an outer cabinet of the washing machine;

FIG. 3 is a perspective view of the washing machine;

FIG. 4 is an enlarged longitudinal sectional view of the front side of the washing machine;

FIG. 5 is a perspective view of the washing machine in the state different from that in FIG. 3;

FIG. 6 is a plan view of the washing machine shown in FIG. 3;

FIG. 7 is a plan view of the washing machine shown in FIG. 5;

FIG. 8 is a longitudinal sectional view of an operation

motor assembly;

FIG. 9 is a block diagram showing an electrical arrangement of a control circuit for controlling the braking means and dehydration motor;

FIG. 10 is a flowchart showing the operation of the control circuit shown in FIG. 9;

FIG. 11 is a time chart also showing the operation of the control circuit; and

FIG. 12 is a longitudinal sectional view of the front portion of a twin tub type washing machine of another embodiment.

An outer cabinet 11 of a twin tub type washing machine shown in FIG. 1 is formed by bending a thin steel plate into a generally rectangular box shape with the upper, lower and one side thereof opened, as shown in detail in FIG. 2. The steel plate thus bent is coupled to a base frame 13 so that the open side or an opening 12 defined between ends 11a and 11b of the steel plate is placed at the front, as shown in FIG. 3. A wash tub 14 and water receiving tub 15 shown in FIG. 1 are disposed side by side with each other within the outer cabinet 11, as well known in the art. An operation box 16 is provided on the outer cabinet 11. A cover 17 is attached to the opening 12 for defining a small compartment 17a recessed relative to the front of the washing machine such that the compartment 17a is suitable for containing a detergent box or generally small articles, as shown in FIG. 4. Double doors 18 opened together are mounted on

hinges. In a modified form, the outer cabinet 11 may have the opening 12 at the rear side thereof and the opening 12 may be closed by a closure member 12a, as shown in FIG. 5. As shown by dimension A in FIGS. 6 and 7 corresponding to FIGS. 3 and 5 respectively, the distance A between screws 19 for coupling the outer cabinet 11, base frame 13, wash and water receiving tubs 14, 15 is equalized in the front and the rear of the washing machine, so that the outer cabinet 11 may be suitable for both constructions shown in FIGS. 3 and 5.

A dehydration tub 21 is disposed within the water receiving tub 15. The dehydration tub 21 has a large number of dehydrating perforations 20 in the peripheral wall thereof. A dehydration motor 22 is mounted on the base frame 13 under the water receiving tub 15 via a plurality of spring members 23 (one of them being shown). Brake means 24 is provided between the water receiving tub 15 and dehydration motor 22. The brake means 24 comprises a base plate 25 mounted on the top of the dehydration motor 22, a rotational member or a brake drum 27 mounted on a rotational shaft of the dehydration motor 22 by a connector 26, and a brake lever 29 mounted on the base plate 25 so that a brake shoe 28 is secured thereto so as to be opposite to the brake drum 27. One end of the brake lever 29 is mounted on the base plate 25 through a shaft 29a for rotative movement. A spring 30 is interposed between the brake lever 29 and base plate 25 in order that a rotative force is applied to the

brake lever 29 so that the braking member or brake shoe 28 is pressed against the brake drum 27. A dehydration shaft 32 projected from the central bottom of the dehydration tub 21 is water-tightly extended through bellows 31 to be coupled to the connector 26 at the lower end thereof.

An operation motor 33 is mounted on a mount 34 secured to the base frame 13 in the vicinity of the dehydration motor 22 under the water receiving tub 15. The operation motor 33 is coupled to the brake lever 29 of the brake means 24 by a well known control wire 35 comprising a sheathing tube 35a and a core wire inserted into the tube 35a. As shown in FIG. 8, the operation motor 33 incorporates a row of gears 36 composing a reduction gear mechanism and a clutch mechanism 37 as reverse rotation preventing means in accordance with the present invention. A take-up wheel 39 is mounted on an output shaft 38 for taking up the core wire 35b. The clutch mechanism 37 comprises a pair of clutch elements 37a, 37b and an electromagnet 40. The clutch element 37a is disposed so as to be in engagement with one of gears 36 and the other clutch element 37b is disposed so as to be axially movable in engagement with a rotor 33a of the operation motor 33. Upon energization of the electromagnet 40, the clutch element 37b is moved upwardly as viewed in FIG. 4 to be engaged with the clutch element 37a. Upon deenergization of the electromagnet 40, a compression coil spring 41 forces the clutch element 37b to depart from the clutch element 37a, thereby releasing the

engagement. The operation motor 33 is further provided with a rotational angle detecting switch 38a for detecting a predetermined rotational angle of the take-up wheel, for example, a 3/4 revolution. The rotational angle detecting switch 38a is operated by a cam 38b directly coupled to the output shaft 38.

The water receiving tub 15 has an access opening (not shown) through which clothes are put into and taken out of the dehydration tub 21. A dehydration tub lid 42 for closing and opening the access opening is rotatably mounted on a shaft 43 in the operation box 16, through a rotatable arm or hinge arm 44. A lid switch 45 is disposed so as to be responsive to the closing and opening of the dehydration tub lid 42 as in conventional washing machines. FIG. 9 shows a control circuit for executing the brake control operation shown in FIG. 10. As shown, the control circuit includes a control section 46 comprising a microcomputer. The control section 46 is supplied with setting signals from operation switch group including a power supply switch 47a, dehydrating operation start switch 47b and the like provided on the operation panel disposed in the operation box 16 and an on-off signal from the lid switch 45. The control section 46 delivers control signals through a drive circuit 50 to a brake circuit 48 including the operation motor 33 and electromagnet 40, the dehydration motor 22 and a display circuit 49 provided on the operation box 16.

Operation of the twin tub type washing machine will now

be described. Particularly, the operation of the brake means 24 in conjunction with the dehydrating operation will be described with reference to FIGS. 10 and 11. Each oblique line portion in FIG. 11 represents an electrically conductive state.

When the dehydration tub lid 42 is closed after the clothes load is contained in the dehydration tub 21, the lid switch 45 is turned on. In this state, then, the power supply switch 47a is turned on and a dehydrating period is set by a timer setting switch of the operation switch group 47. Thereafter, when the start switch 47b is turned on, the operation motor 33 and electromagnet 40 are energized at time T0 in FIG. 11 and the dehydration motor 22 is energized with a delay of period t1 (1 to 2 seconds). Accordingly, first, the core wire 35b of the control wire 35 is taken up by the take-up wheel 39 which receives rotation of the rotor 33a of the operation motor 33 through the clutch mechanism 37 in the connecting state and the row of gears 36. Consequently, the brake lever 29 is rotatively moved about the shaft 29a such that the brake shoe 28 is moved away from the outer periphery of the brake drum 23 against a force of the spring 30. When the core wire 35b is sufficiently taken up, the rotational angle detecting switch 38a is turned off such that the operation motor 33 is deenergized. However, since the operation motor 33 is coupled with the gear of the higher reduction gear ratio in the row of gears 36 through the clutch mechanism 47 by the electromagnet 40 which is

continuously energized, the operation motor 33 is not reverse rotated and is held deenergized. Consequently, the braking of the brake drum 27 of the brake means 24 against the dehydration tub 21 is released and in this state, the dehydration tub 21 is driven by the dehydration motor 22, thereby executing the dehydrating operation for the clothes. See steps P1 to P5 in FIG. 10.

When the dehydration tub lid 42 is opened during the above-noted dehydrating operation, for example, at time T1 in FIG. 11, the lid switch 45 is turned off with the result that the dehydration motor 22 is immediately deenergized. However, the timer means of the control section 46 causes the electromagnet 40 of the clutch mechanism 37 to be deenergized with a delay of period t2 in FIG. 11, for example, one or two seconds. As a result, since the clutch mechanism 37 is deactivated for the operation motor 33 to be disconnected from the row of gears 36, the brake lever 29 is rotatively moved such that the spring 30 causes the brake shoe 28 to be pressed against the brake drum 27. Accordingly, a braking force is applied to the dehydration motor 22 with a delay of one or two seconds from the deenergization thereof. Since such a delay reduces rotation of the brake drum 27 (rotation of the dehydration tub 21) and the brake shoe 28 is pressed against the brake drum 27 the rotation of which is reduced, wear of the brake shoe 28 (the brake means 24) may be reduced. Furthermore, since the above-described delay is set to the period of only one or

two seconds, rotation of the dehydration tub 21 is already terminated or about to be terminated when a user opens the dehydration lid 42 to have access to the clothes in the tub 21, thus ensuring safety. See steps P6 to P9 in FIGS. 10.

When the dehydration tub lid 42 is opened after completion of the dehydrating operation with elapse of a set dehydrating period, the dehydration motor 22 has already been deenergized and accordingly, only the deenergization of the electromagnet 40 of the operation motor 33 takes place with a delay of period t2 from the opening of the lid 42 when the lid switch 45 is turned off.

When the dehydrating operation is completed at time T2 in FIG. 11 with the set dehydrating period elapsing in the state that the dehydration lid 42 remains closed, the dehydration motor 22 is immediately deenergized. However, the timer means of the control section 46 causes the electromagnet 40 of the clutch mechanism 37 to be deenergized with a delay of period t3 in FIG. 11, for example, one or two minutes. Accordingly, the braking operation of the brake means 24 is executed with a delay of one or two minutes from deenergization of the dehydration motor 22. See steps P6 and P9 to P12 in FIG. 10. Even when the inertia of the dehydration tub 21 is large, rotation of the brake drum 27 (rotation of the dehydration tub 21) is reduced to a large extent. Since the brake shoe 28 is pressed against the brake drum 27 the rotation of which has been reduced to a large extent, wear of the brake shoe 28

may be reduced. Deenergization of the electromagnet 40 after the normal completion of the dehydrating operation returns the brake means 24 to the initial state.

In accordance with the above-described twin tub type washing machine, the brake means 24 braking the dehydration tub is operated by the operation motor 33. The braking operation of the brake means 24 is performed with the delay of a predetermined period from deenergization of the dehydration motor 22. Consequently, the construction for closing and opening the dehydration tub lid 42 is not limited by the rotative movement stroke of the hinge of the dehydration lid, unlike the prior art wherein operation of the brake depends upon the rotative movement stroke of the hinge of the dehydration tub lid 42. As a result, the dehydration tub lid may be of a folding type, for example and thus, the construction of the dehydration lid may be changed desirably. Furthermore, the construction around the hinge may be simplified. In particular, the rapid wear of the braking member due to quick rise of the braking operation is peculiar to the brake of the motor drive type and the brake may be prevented from such rapid wear of the braking member.

The braking operation of the brake means 24 is initiated several seconds after the deenergization of the dehydration motor 22 when the dehydration tub lid 42 closing and opening the access opening facing the dehydration tub 21 is opened. When the operation of the washing machine is

completed with the dehydration tub lid 42 closed, the braking operation is initiated several minutes after the deenergization of the dehydration motor 22. As a result, the brake means 24 may be further prevented from the wear together with provision of safety in use.

Furthermore, in the above-described construction, the operation motor which operates the brake means 24 is disposed in the vicinity of the dehydration motor 22. Accordingly, the operating structure for the brake means 24 may be assembled merely by coupling the operation motor 33 to the brake means 24 in the vicinity of the dehydration motor 22. Consequently, the assembling work may be simplified as compared with the prior art wherein the brake disposed under the water receiving tub needs to be coupled to the lid over the water receiving tub away from the brake via the rotatable arm and coupling wire.

The dehydration motor 22 and operation motor 33 are mounted on the base frame 13 and the operation motor 22 is coupled to the brake means 24 via the control wire 35 such that these members are unitized. In accordance with this arrangement, only these parts have to be mounted on the base frame 13 and other parts can be mounted thereon in sequence. As a result, the assembly sequence may be simplified.

FIG. 12 illustrates another embodiment of the invention. In order that the compartment defined by the cover 17 may be utilized as a drying compartment, a hanger member 51 and a heated air supplier 56 are provided. The

heated air supplier 56 comprises a feed duct 52, electric heater 53, centrifugal fan 54 and motor 55, whereby the twin tub type washing machine is provided with a drying function.

The foregoing disclosure and drawings are merely illustrative of the principles of the present invention and are not to be interpreted in a limiting sense. The only limitation is to be determined from the scope of the appended claims.

WHAT WE CLAIM IS:

1. A twin tub type washing machine comprising:

a) an outer cabinet in which a wash tub is disposed side by side with a water receiving tub having an upper open end;

b) a lid provided to close and open the upper open end of said water receiving tub;

c) a dehydration tub disposed within said water receiving tub so as to be coupled to a dehydration shaft rotatably extended through the bottom of said water receiving tub;

d) a dehydration motor disposed under said water receiving tub for driving the dehydration shaft;

e) braking means for braking the dehydration shaft;

f) an operation motor for operating said braking means; and

g) control circuit means for controlling both of said dehydration and operation motors so that said motors are energized and deenergized.

2. A twin tub type washing machine according to claim 1, wherein said braking means comprises:

a) a rotational member provided so as to be rotated with said dehydration shaft;

b) a braking member provided so as to be moved into contact with and away from said rotational member;

c) spring means for usually urging said braking means in the direction that said braking means is brought into contact with said rotational member; and

d) displacement transmission means operatively coupled to said operation motor so as to be displaced when rotation is transmitted from said operation motor thereto, thereby moving said braking member away from said rotational member.

3. A twin tub type washing machine according to claim 2, wherein said operation motor further comprises a rotor, an output shaft, reverse rotation preventing means provided between the output shaft and the rotor for preventing the reverse rotation of the output shaft of said operation motor in the state that the same is effectuated, and an electromagnetic solenoid controlling said reverse rotation preventing means so that the same is either effectuated or rendered ineffective.

4. A twin tub type washing machine according to claim 1, wherein said control circuit means comprises timer means provided for initiating the energization of said operation motor prior to the energization of said dehydration motor in order that said braking means is deactivated at the time a dehydrating operation is initiated.

5. A twin tub type washing machine according to claim 1, wherein said control circuit means comprises timer means

provided for initiating the braking operation performed by said operation motor with a predetermined delay period from the deenergization of said dehydration motor.

6. A twin tub type washing machine according to claim 5, wherein the washing machine further comprises a lid switch operated in response to the opening of said lid, thereby deenergizing said dehydration motor.

7. A twin tub type washing machine according to claim 6, wherein said control circuit means comprises determination means for determining whether said dehydration motor is deenergized based on termination of an operation cycle of the washing machine or on the operation of said lid switch and wherein the predetermined delay period is set to be longer in the case of the termination of the operation cycle of the washing machine than in the case of the operation of said lid switch.

8. A twin tub type washing machine according to claim 1, wherein said outer cabinet has, at the front side, a compartment utilized to contain generally small articles, an opening formed so as to correspond to the compartment, and a door closing and opening the said opening.

9. A twin tub type washing machine according to claim 8, which further comprises fan means provided in said outer

cabinet for supplying warm air into said compartment.

10. A twin tub type washing machine substantially as herein described with reference to the accompanying drawings.

Published 1990 at The Patent Office, State House, 66/71 High Holborn, London WC1R 4TP. Further copies may be obtained from The Patent Office. Sales Branch, St Mary Cray, Orpington, Kent BR5 3RD. Printed by Multiplex techniques ltd, St Mary Cray, Kent, Con. 1/87

PUB-NO: GB002232755A

DOCUMENT-IDENTIFIER: GB 2232755 A

TITLE: Twin tub type washing machine

PUBN-DATE: December 19, 1990

INVENTOR-INFORMATION:

NAME	COUNTRY
FUSHIYA, MITSUJI	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
TOKYO SHIBAURA ELECTRIC CO	JP

APPL-NO: GB09012587

APPL-DATE: June 6, 1990

PRIORITY-DATA: JP15199889A (June 13, 1989) ,
JP15275689A (June 15, 1989) ,
JP24948789A (September 26, 1989)

INT-CL (IPC): D06F049/00

EUR-CL (EPC): D06F029/02 , D06F049/00

US-CL-CURRENT: 68/12.17 , 68/23R

ABSTRACT:

CHG DATE=19990617 STATUS=O> A twin tub type washing machine includes a dehydration tub (21) driven by a dehydration motor (22), a brake (24) including a braking member (29) moved into contact with and away from a rotational member (27) so that the dehydration tub (21) is braked, an operation motor (33) driven to move the braking member (29) into contact with and away from the rotational member (27), and a control circuit. When the dehydration operation is initiated, the control circuit operates to start the operation motor (33) one or two seconds before the start of a dehydration operation, thereby unbraking the dehydration tub (21). When a dehydration tub lid (42) is opened, the control circuit is responsive to a lid switch (45) interlocked with the lid (42) and operates to immediately deenergize the dehydration motor (22) and then, to deenergize the operation motor (33) with a delay of one or two seconds so that the dehydration tub (21) is braked. □